Foreword and Editorial

We are very happy to publish this issue of an International Journal of Advanced Science and Technology by Science and Engineering Research Support Society.

This issue contains 8 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

The paper “Class-AB CMOS Buffer with Low Power and Low Leakage Using Transistor Gating Technique” proposed a rail-to-rail class-AB CMOS buffer amplifier to drive large capacitive loads. A new technique is used to reduce the leakage power of class-AB CMOS buffer circuits without affecting dynamic power dissipation. The name of the applied technique is TRANSISTOR GATING TECHNIQUE, which gives the high speed buffer with the reduced low power dissipation (1.05%), low leakage and reduced area (2.8%) also. The proposed buffer is simulated at 45nm CMOS technology and the circuit is operated at 3V supply with Cadence software. This analog circuit is performed with reduced performance degradation as well as high current driving capability for the large input voltages.

Paper “A Hybrid Scheduling Algorithm with Load Balancing for Computational Grid” suggests a new scheduling algorithm for computational grids that considers load balancing, fault tolerance and user satisfaction based on the grid architecture, resource heterogeneity, resource availability and job characteristics such as user deadline. This algorithm reduces the makespan of the schedule along with user satisfaction and balanced load. A simulation is conducted using Grid Simulator Toolkit (GridSim). The simulation results show that the proposed algorithm has better makespan, hit rate and resource utilization.

In the paper “Effects of Rice Husk as Substitute for Fine Aggregate in Concrete Mixture” aimed to analyze the effect of rice husks as fine aggregate in terms of water-cement ratio, quality and size of coarse aggregate, and consistency of the mixture and determine how rice husk differ with other ordinary concrete mix as fine aggregate in terms of water adsorption, compressive strength, tensile strength and modulus of elasticity. This also aims to help contribute to the industry in saving the environment, to encourage the government to find solutions regarding the disposal to landfills of waste materials and save the environment, to provide new knowledge to the contractors and developers on how to improve the construction industry methods and services by using rice husk, and to sustain good product performance and meet recycling goals.

The paper “Various Aspects of Solar Energy Utilization: Review” present the current status and future aspects of SE in the world by comprehensively reviewing various SE related studies conducted up to date and to highlight some corresponding available sustainable energy methods towards establishing energy policies.
Paper “Image Retrieval System for Composite Images using Directional Chain Codes” developed an image retrieval system that works on finding similar composite images containing graphical shapes as well as text from a database of thousands of images. By proposing a novel method for text localization, extraction followed by detection, it has demonstrated how this method outperforms commercial OCR tools. The significant feature of this work is its handling the requirements of invariance to font size, design, text region orientation and its ability to give accurate result even in the presence of complex background and graphical elements. The methodology has been tested for English text but is capable to handle any other language.

This paper “Investigation of Correlated Rayleigh Fading Channel with Alamouti’s STBC-MRC system” presented simulation results concerning the adaptation of transmit and receive antenna diversity with digital multilevel modulation techniques in a multiuser MIMO Alamouti’s STBC MRC secured wireless communication system. The system performance gets better with the more receiver diversity. In this context of system performance, it can be concluded that the implementation of 16-QAM digital modulation technique with 2×3 antenna arrangements provides acceptable result for such a correlated Rayleigh Faded multiuser Alamouti’s STBC MRC secured wireless communication system.

In the paper “An Appraisal of Agile Software Development Process” provides a critical assessment of the agile software development process in a systematic manner. This study is based on the survey of previous research reported in the contemporary literature and the practices being followed in this area.

This paper “Design and Investigative Aspects of RF-Low Power 0.18-μm based CMOS Differential Ring Oscillator” presents the designing and investigative aspects of a low power, wide frequency range, and delay cell based 3 and 5-stage ring oscillator for RF-Ultra-Wide-Band application. The wide range of frequency is achieved by using two variable voltage sources i.e. control voltage source (Vctrl) and tail current source (Vtail). A tail current improvement is responsible to control the charging and discharging time of oscillator. Moreover, the push-pull configuration is also used to attain high frequency. In addition, the proposed work presents the effect of control voltage and tail current source on the oscillator frequency. This work establishes a relation between oscillator frequency and its power consumption. This work also gives a comparison between 3-stage and 5-stage ring oscillator. The circuit is implemented in 180 nm CMOS process provided by TSMC. The designed oscillator is measured to cover a frequency range of 1.3 – 5.7 GHz for 3-stage and 1.99 – 3.12 GHz for 5-stage ring oscillator. The simulated circuit draws 0.510 mW of average power for 3-stage ring oscillator and 0.719 mW average power for 5-stage ring oscillator.

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Wai-Chi Fang, National Chiao Tung University, Taiwan

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